REMARKS

Claims 1-5, as amended, are pending herein.

The applicants note that the Examiner has rejected claims 1 to 5 under 102(e) over Hadzic. The applicants have amended claim 1 to better define the invention. In particular, the invention is based on the unexpected finding that, contrary to intuitive reasoning, it can be beneficial to decode the timestamped packets at multiple nodes along a route between source and destination, regenerate the clock signal at each node, and then generate new timestamped packets for forwarding to the next node.

First, the Examiner should appreciate that the delay in question refers to the physical time it takes the timestamped packets to traverse the network, not the phase shift between the source and destination clock signals that the invention seeks to eliminate. As the Examiner will appreciate, this timing information is conveyed between the source and destination nodes in timestamped packets. This is shown in Hadzic, where the clock signals are applied to master adapter 112, which generates timestamp packets and sends them to slave adapter 116, which in turn regenerates the clock signals and applies them to the slave network 118.

While for any given traffic density there is a statistical expected delay for the transmission of packets through the network, this delay follows a probability distribution that can be calculated. For example, suppose the expected delay between nodes is 10 μsecs. In reality, not all packets will be subject to this delay. Some will have no delay and some will have a longer delay. Suppose the probability for each node that each packet will be subject to no delay is 1/3,

that means one out of every three packets should be subject to no delay at all. But the chance of a packet not experiencing a delay across n hops, is $(1/3)^n$, or 1/9. Thus, the chance of a packet (and hence the number of packets not experiencing a delay) increases dramatically as the number of hops increases.

Thus, by regenerating the source signal and producing new timestamps at intermediate points along the route, even though this takes a finite time to accomplish, and that is where the invention is counter intuitive, there is a much greater chance that a timestamped packet or its renewed progeny will traverse the network without a delay than is the case for a single timestamped packet sent from the source to the destination. The invention breaks the probability chain.

Another way to look at the invention would be to imagine crossing a stream with spaced dice acting as stepping stones, and where you could only cross when the six face was showing up. If there were ten dice, and you tried throwing all dice at once (assuming there was some way you could do this), the probability of throwing all sixes would be $(1/6)^{10}$, a very large number. In order to get a row of sixes you would have to throw a very large number of times. But suppose, instead of attempting to throw all at once before setting out across the stream, you only threw the first dice. The probability of throwing a six would be one in six, so you could expect to throw a six fairly quickly. The same would be true as you sequentially threw the subsequent dice in turn as you approached them. The probability therefore is that it would take you much less time to cross the stream than if you waited until you threw all sixes at once.

The invention works on the same principle, except when dealing with a large number of packets, the probabilities translate into a much greater number of packets traveling between

source and destination with intermediate regeneration than when they are sent direct from source to destination.

Contrary to the Examiner's suggestion, Hadzic clearly does not show the regeneration of clock signals at intermediate nodes from timestamped packets. The Examiner appears to have taken random passages from Hadzic and applied them out of context. In Figure 1, the TDM frames are encapsulated in master adapter 112 (paragraph [0056]) and sent to slave adapter 116. The clocking information is lost (paragraph [0056], line 8).

Figure 2 explains how the clocking information can be recovered using timestamps attached to the packets (see paragraph [0059]). There is no disclosure of regeneration of the clock signal for reproducing timestamps at intermediate nodes as claimed. Slave adapter 116 produces a reconstructed clock signal, not timestamped packets.

The Examiner alleges that paragraph [0024] discloses the calculation of expected delay because this paragraph refers to the use of timestamps to calculate phase or frequency error. Clearly, this passage is not referring to the delay of the timestamped packets per se, but the phase or frequency error in the clock signal that is being corrected. If the source and destination clocks are generated by different sources, they will likely have a slight phase or frequency error. The correction of this error is the object of both the invention and Hadzic. This phase or frequency error has nothing to do with the delay experienced by the packets traversing the network.

In the applicant's respectful submission, the invention as presently claimed is clearly distinguished from Hadzic for the above and other reasons.

Allowance of claims 1-5 is courteously solicited.

Respectfully submitted,

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CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence consisting of 7 pages is being transmitted electronically to Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia, 22313-1450 via EFS Web on November 13, 2007.

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